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Controlling oxidation in skin care products with novel seaweed antioxidants

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Studies have shown that brown macroalgae contain a wide range of bioactive compounds. Hence, brown algae have great potential as a resource for development of new natural antioxidants, which can be used to increase the oxidative stability of lipid rich products. In skin care emulsions such as facial cream, unsaturated lipids, e.g. oleic and linoleic acid, play a role in skin strengthening and water hold capacity. However, these lipids are prone to oxidation, which results in lost functionality, development of undesirable off-odors and oxidative stress in the skin.

Our ongoing work aims to extract highly antioxidative compounds from brown alga *Saccharina latissima* and *Fucus vesiculosus* and investigate possible applications of these extracts in skin care emulsions (facial cream). Water and ethanolic extracts were produced and the antioxidant compounds were characterized and the *in vitro* antioxidant properties determined. Storage trials with different formulations of skin care emulsions with seaweed extract added were conducted and the oxidative stability was evaluated during storage (dark at room temperature).

The antioxidant composition and properties *in vitro* were highly dependent on the extraction media and type of seaweed. Generally, extracts from *F. vesiculosus* possessed higher *in vitro* antioxidant activity compared with similar *S. latissima* extracts.

In a model system (facial cream) ethanolic *F. vesiculosus* extract was able to lower development of secondary oxidation products with up to 30% compared to a control without seaweed extract. However, the physical stability of the facial cream was challenged when *F. vesiculosus* extracts were added. In another trial, commercial cream was added *S. latissima* extracts and the oxidative stability was determined in order to evaluate the antioxidant efficacy of different types of *S. latissima* extracts. However, no clear antioxidant activity of *S. latissima* extracts in the cream, because the cream itself was stable, both physically and oxidatively, during 10 week at these storage conditions.

Therefore, accelerated studies will be performed in the future.